DOCUMENT RESUME

ED 435 738 TM 030 390

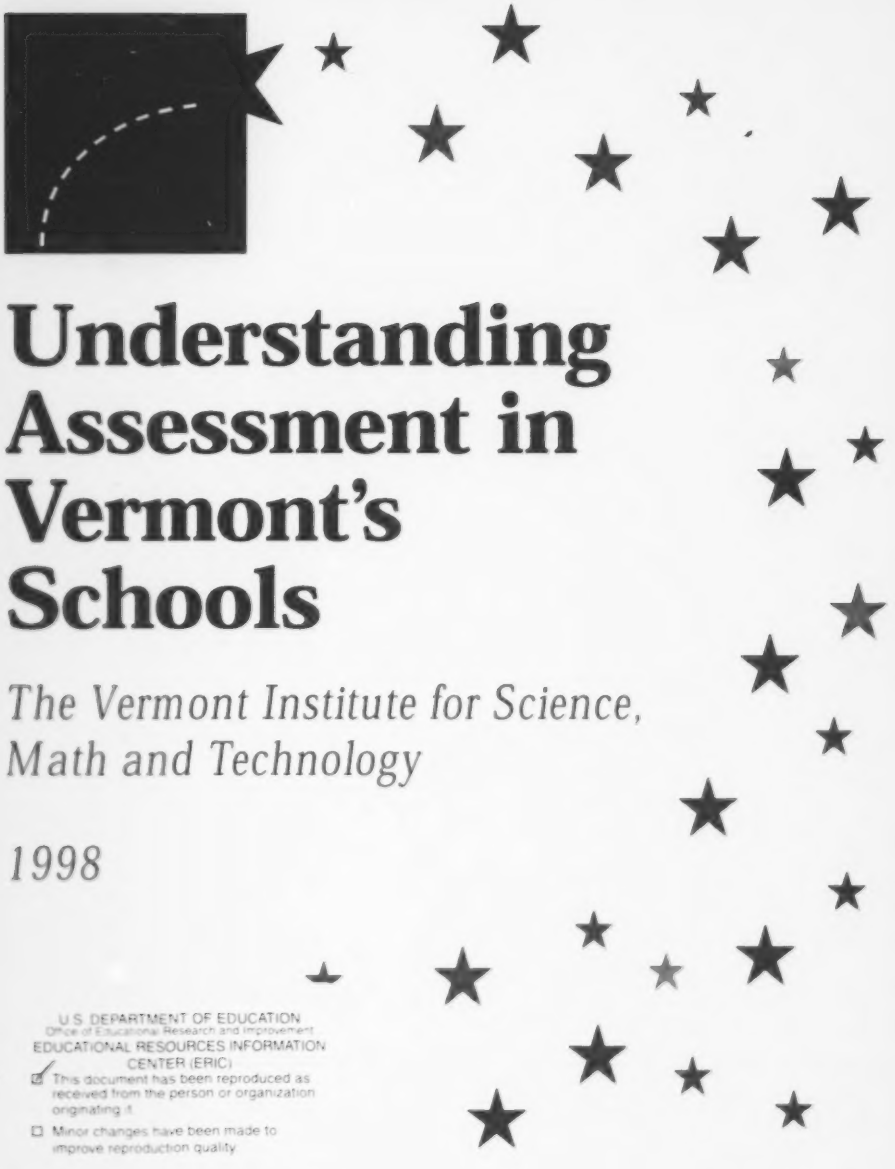
AUTHOR Harris, Doug
TITLE Understanding Assessment in Vermont's Schools.
INSTITUTION Vermont Inst. for Science, Math and Technology, Burlington.
SPONS AGENCY Josephine Bay Paul and C. Michael Paul Foundation, New York, NY.; National Science Foundation, Arlington, VA.
PUB DATE 1998-00-00
NOTE 16p.; Additional support provided by the Regional Alliance for Science Edudation.
PUB TYPE Reports - Descriptive (141)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Academic Standards; *Educational Assessment; Elementary Secondary Education; *Performance Based Assessment; Portfolio Assessment; Scoring; State Programs; *State Standards; Test Construction; Test Use; *Testing Programs
IDENTIFIERS Scoring Rubrics; *Vermont

ABSTRACT

This booklet is designed to help parents and community members answer questions about assessment in the context of the Vermont Framework of Standards, the Equal Education Opportunity Act of 1997, and other statewide initiatives. Assessment is changing in Vermont in response to new legislative mandates that call for standards-based assessment designed to improve student learning. Parents are familiar with paper-and-pencil test, but they are less familiar with new types of performance based assessment, including portfolios, and new types of scoring, such as check lists and rubrics. In Vermont, all students will participate in the Vermont Comprehensive Assessment System, which will track trends across the state over time. Questions parents and community members frequently ask about assessment are answered. (SLD)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 435 738



Understanding Assessment in Vermont's Schools

The Vermont Institute for Science, Math and Technology

1998

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

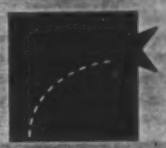
☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

One of a series of booklets funded by The Josephine Bay Paul and C. Michael Paul Foundation

TM030390

BEST COPY AVAILABLE



The Vermont Institute for Science, Math and Technology (VISMT) was established in 1992 as a nonprofit organization to implement a $9.6-million National Science Foundation grant awarded to the Vermont Department of Education. A second 5-year grant was awarded in 1998. The goal of the project is to dramatically transform science, math and technology education for all Vermont students.

This booklet is one of a series funded through a grant from the Josephine Bay Paul and C. Michael Paul Foundation. VISMT and other education improvement organizations in Vermont are grateful to the Foundation for its thoughtful support of the programs that are improving the education of our children. Additional support provided by the Regional Alliance for Science Education

Booklet by Doug Harris

Editors

Allen Gilbert
Christine Graham
Marge Petit
Nicole Saginor

Our thanks for use of assessment samples to: Cabot School, Guilford School and Community, Flood Brook School, Creative Publications, the Vermont Department of Education and the NAEP 1996 Mathematics Report Card. Please do not reproduce these examples without permission from them or from VISMT.

BEST COPY AVAILABLE

Introduction

Your child comes home with his report card showing a C in science. You think back to the work you watched your child complete during the marking period — projects, reports, problem-solving — and to the quizzes and tests you know he took in chemistry class. How do these translate into a grade?

Your neighbor tells you that he is worried that his child is not reading as well as he would expect by third grade. How will teachers use testing and observation to determine the best ways to help her read better?

Your child may take the SAT and writes essays for college admission. She may also take a drivers' test, keep a math portfolio, bring home results of national and statewide testing, and experience countless other assessment situations.

Assessment is the word we've come to use to describe all ways of measuring learning. You may be most familiar with tests, but there are many other ways to see what, how, and how well we are learning.

Why is there so much emphasis on assessment? How has assessment changed and remained the same over time? What kinds of assessments are being used in our schools today, and what kind of information do they provide? How does assessment fit in with the Vermont Framework of Standards, the Equal Education Opportunity Act of 1997, and other statewide initiatives? What does assessment have to do with Learning Opportunities?

This booklet is designed to help parents and community members answer these questions. At the same time, it may suggest other questions which you will want to address with your school and local educators.

Why Is Assessment Changing?

Changes in Expectations

One of the main reasons that assessment is changing is that we are expecting more of our students. Take math as an example. Not so many years ago, algebra was a college prep course. Today, basic algebra is only the beginning of the math skills technical workers need right out of high school.

In all subject areas, knowing the material is still important, but it is not enough. Students are expected to problem solve, think critically, communicate with words, numbers, and graphics, work well in group situations, and reflect on their own learning.

Many of these changes in expectations are reflected in national standards, in national studies such as the SCANS Report, in Vermont's Framework of Standards and Learning Opportunities, and in local curriculum. As expectations change, we need to change what we assess; otherwise, the measurement will be incomplete or meaningless.

Changes in the Purposes of Assessments

For many years, assessments have mainly reported students results as compared to each other. For example, students have been graded on a curve or given grades that have different meaning based upon the "standards" of individual teachers. Standards-based education, however, focuses on how well each student does in relation to standards or educational goals and expectations. It is no longer good enough to be doing better than the other students. In the Equal Educational Opportunity Act of 1997, the Vermont legislature, "To keep Vermont's democracy competitive and thriving," required that standards be rigorous and challenging and that assess-

The Vermont Framework of Standards and Learning

ments determine attainment of the standards.

Two examples of standards-based assessment that most of us are familiar with are the driver exam and the test for a hunting license. In both cases, we are measured against what we know and are able to do, not how we compare with others taking the test.

The purpose of moving to standards-based assessment in schools is to assess students against a rigorous set of expectations for learning - the Vermont Standards.

Changes in What We Need to Communicate

Students and parents pay attention to what we assess and how we report it.

Therefore, report cards, grades, and scores must be tied directly to the expectation, or standard, of what students know and are able to do.

Changes in Assessment as a Teaching Tool

Assessments that happen after teaching - the end-of-chapter test, the grade on the theme, the lab report grade - should not be the only assessment that goes on. This type of assessment is important, but now assessment is also a key part of instruction as it is happening. Instead of the student completing a lab report and being "given a grade," students assess their own work based on clear criteria for quality work. They are provided examples of this type of work and use standards and criteria to make their own work better. They receive the teacher's assessment throughout the learning process.

These changes have led to development of new assessment tools which are really teaching and learning tools. Teaching and assessment are not separate but are part of the same process.

Purposes of Assessment

Assessments that are designed to happen in a classroom on a regular basis are created to improve *individual* student learning. Other assessments are school or district- based and provide information for *program* improvement. Still others are related to high-stakes decisions, such as eligibility for programs or college admission.

The Equal Educational Opportunity Act of 1997 calls for assessment to be used to improve student learning. The law requires that assessment be based on standards and be used to enhance classroom and school programs.

Classroom assessment is the foundation or starting point of the assessment program. Assessment is primarily a tool to help teachers teach better and students learn more, based on standards.

Classroom-based Assessment

In the classroom, teachers and students use assessment before, during, and after instruction:

- When the class begins a new unit, the teacher might use a pretest or other assessments, such as observation, interviewing, and questioning, to determine what the students already know.

- During instruction, teachers and instructional assistants use assessments to monitor student progress and to decide what to teach next. Students use self-

assessments such as questioning, conferences, quizzes, and tools such as checklists and rubrics, which are discussed further on page 8.

- Following a unit, or at the end of a semester or year, teachers assess students through testing and by evaluating projects and reports created during the unit. These assessments are often used to help determine student grades and decisions about future study.

School and District Level Assessment

Teachers and school administrators use assessment data to make program decisions. These decisions may impact the curriculum, professional development for teachers, programs, scheduling, staffing, budgeting, and other important issues. In this way, assessment, properly used, is a powerful tool for school improvement. School and district improvement is discussed in more detail on pages ... and ....

Admission Decisions

Assessments are also used to place students in programs or to gain admission to colleges or technical schools.

Many colleges use a standardized test such as the Scholastic Aptitude Test (SAT) or the American College Test (ACT) as an admission tool but also use essays, interviews, and recommendations.

All of these purposes - improving student learning, improving instruction, and making placement decisions - are important and useful assessment purposes.

Types of Assessments

No matter what type of assessment is used, we first decide what the child must know or be able to do. This target is called a *standard*. In Vermont, the *Framework of Standards and Learning Opportunities* is a source of this information, as is the local curriculum and the teacher's judgment. Then, we decide what the student must produce or how he must perform to meet this standard.

Paper and Pencil Tests

Contrary to rumor, tests are still alive and well in Vermont's schools. In fact, in many schools, children experience more testing than ever before.

All tests consist of a series of problems, which are called items. Some have students select from alternatives. Multiple choice, matching, and true-false items are examples. Others, such as essays, short answers, fill in the blank, etc., have students "construct" or create their own responses. The best type of question to ask depends upon the learning and standard(s) being assessed.

Student-selected items are much faster to score. For this reason, they sometimes have been used when they shouldn't. Therefore, standardized assessments more and more reflect a balance of student -selected and student-constructed items.

Performance Assessments

Sometimes, students are assessed for knowledge and skills which are not best measured by a paper and pencil test. For example, when you take a drivers exam, it is a combination of a paper and pencil test and a performance assessment which takes place behind the wheel. Performance assessment is not new but is becoming more and more common in schools as we pay more attention to "learning by doing" and showing what you know by using new understanding and skills.

At times, all students must perform the same task or produce the same product. For example, each student might be expected to develop a line graph from the same set of data, or explain the results of the same

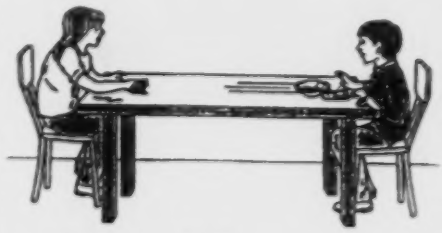
Constructed Response:

Soup Problem

In the school cafeteria, your friend quickly slides a bowl of soup across the table to you. The soup sloshes onto her hand as she slides it towards you and then the soup sloshes out in front of you when the bowl comes to a stop.

A. Explain why the soup sloshes onto the hand of your friend who is pushing the bowl.

*B. Explain why the soup sloshes out in front of you when the bowl comes to a stop.**



**Sample task released by Vermont Institute of Science, Math and Technology.*

BEST COPY AVAILABLE

Scoring Guide Rubric:

Approach and Reasoning

Level 1
Approach wouldn't work
or
No approach evident

Level 2
Approach would lead to solving only part of the problem or reaching a partial solution
or
Approach would would work but there is some flaw in the reasoning

Connections

Level 1
Response stopped without including a mathematically relevant observation with respect to her/his solution

Level 2
Made a mathematically relevant observation about her/his solution
or
Identified an underlying mathematical concept or pattern in her/his solution
or
Solved the problem and then recreated the problem and found a new solution
or
Solved the problem and then used a different mathematical process to solve the same problem

Solution

Level 1
No work is present
or
No part of the solution is correct
or
Some work is present, but the work doesn't support the the answer given

BEST COPY AVAILABLE

Level 3

Approach worked or would work for solving the problem, and reasoning, if evident, is not flawed

(Note: Use of a formula is an approach that worked or would work)

Level 4:

Approach worked, and at least one of the following 3 additional aspects of good problem solving is evident.

Justifying the application of a known formula or rule used to solve all or part of the problem

or

Making a formula or rule used to solve all or part of the problem

or

Describing verification of her/his solution

Level 3

Related this problem to a similar problem or to a real world phenomenon by expressing the mathematical relationship(s)

or

Analyzed the relationship among elements in her/his solution or among similar or different mathematical topics in her/his solution

or

Tested and accepted and/or rejected a hypothesis or conjecture about her/his solution

or

Identified a formula or rule, while solving the problem, that worked or would work in solving all or part of that problem.

Level 4

Solved the problem, discovered a general rule about the solution, and demonstrated understanding of the generalization either through explanation of the derivation, or through application to more than one other case

or

Solved the problem and then extended her/his solution to a more complicated solution

or

Evaluated the reasonableness or significance of her/his solution

Level 2

The solution is correct for only part of the problem, and there is work to support those correct part(s)

or

The solution contains mathematical errors which lead to an incomplete or incorrect answer

Level 3

The answer is correct, and the work in the solution supports the answer

BEST COPY AVAILABLE

Performance Assessment Example:

Stone Wall Physics

To provide participants an experience in the kind of hands-on learning they would be designing for students, Guilford Art teacher Martina Dancing and volunteer Smokey Fuller coordinated the building of a stone wall in front of the school using simple physics.

photo by Steve Kohner

Students and adults use simple machines and physics to their advantage.

experiment. Other times, students are given choices. They might go at and gather data and decide how they will show it. They might represent their work with a table, a line graph, or a bar graph. They might communicate experiment results through a lab report or a demonstration.

Assessing Products and Performances

Two scoring guides often used to assess products and performances are the *check list* and the *rubric*.

A check list is often used when a task has certain steps which can be checked off as "completed" or when a simple yes or no answer is required. An example, the "Simple Machines Grab Bag Check List" developed for use in the Flood Brook School, is shown on page 10.

A rubric consists of performance levels, a set of clear expectations, and descriptors for each level of performance. The Vermont Elementary and Middle Level Mathematics Portfolio Scoring Guide for grades pre-K through 8 is a good example of a rubric.

Rubrics should always have sample responses that illustrate the levels of performance. These are collected over time by the teacher and help students to understand exactly what performance is expected of them. These samples are sometimes called "benchmarks" or "exemplars" because they define *exemplary* performance.

Checklists, rubrics, and benchmarks can be used effectively by students during instruction. They can assess their own work and can confer with teachers using the checklist or rubric as a basis for the assessment. They can also be used effectively by schools and districts as one measure of student performance.

Portfolios

Like artists and advertising executives, students can use portfolios to demonstrate the quality of their work.

Students have been collecting work in a folder for a long time. However, an assessment portfolio provides a structure for a collection of work.

Vermont's Mathematics Portfolio is a good example. In this program, teachers provide many opportunities in complex problem-solving across the mathematical content. Students solve problems that provide the opportunity to use their knowledge and skills in arithmetic, geometry, algebra, and probability and statistics. Student work is assessed using the Vermont Mathematics Portfolio Scoring Guide which assesses the quality of the approach used, use of mathematical reasoning to support that approach, the student's ability to make mathematical connections, the accuracy of the solution, and the ability to communicate the solution mathematically using graphs, tables, charts ad mathematical language including symbolic notation.

Work is assessed throughout the year by

BEST COPY AVAILABLE

Scoring Guide "Check List":

Simple machines grab bag check list

Did you:	Yes	No
• *identify your complex machine and describe its function?*	❑	❑
• *describe the machine's "work" in scientific terms?*	❑	❑
• *identify and label the simple machines which are connected together to make your complex machine?*	❑	❑
• *identify and label the resistance, direction of the work accomplished (resistance moving), effort and direction of effort?*	❑	❑
• *explain how the simple machines work as a system to accomplish the desired work?*	❑	❑

students and teachers using the Vermont Mathematics Portfolio Scoring Guide. Teachers use the results to make instructional decisions. Students use the results to improve their performance. This ongoing process promotes the student as an integral part of the assessment process. Students select their best problem-solving work at the end of the year.

Therefore, the portfolio, instead of being a random selection of work, is structured to represent the student's best mathematical problem-solving.

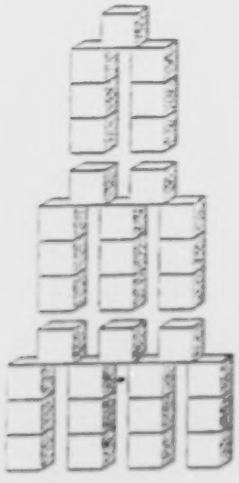
Uses of Assessment Results by Schools and Districts

Assessment conducted by students and teachers in the classroom is highly valuable and can lead to rapid individual improvements. Schools and districts also make use of assessment data in important ways.

Just as teachers use assessment results to communicate with students and parents, schools and districts can use results to communicate with the community. Where are our programs strongest? Where do we need to work harder, or smarter? What do results over time tell us about changes we've made in programs or materials? How do our students stack up against the state, national, or international standards? Assessment information can help to answer all of these questions.

Schools and districts can also use assessment results to help to make key decisions, such as wisely allocating limited time, dollars, and

Portfolio Example:



Patterns 7

1 arch takes 7 cubes to build.

2 arches take 11 cubes to build.

3 arches take 15 cubes to build.

How many cubes to build 10 arches?

How many cubes to build 100 arches?

Source: Algebra Thinking, First Experiences. Copyright 1990 Creative Publications.

Note: This task may not be reproduced without written permission of Creative Publications.

BEST COPY AVAILABLE

energy. Results may call for more spending, staffing, professional development, or equipment in one area, perhaps less in another. Educators and school board members can make more informed decisions once they know what their students know and can do.

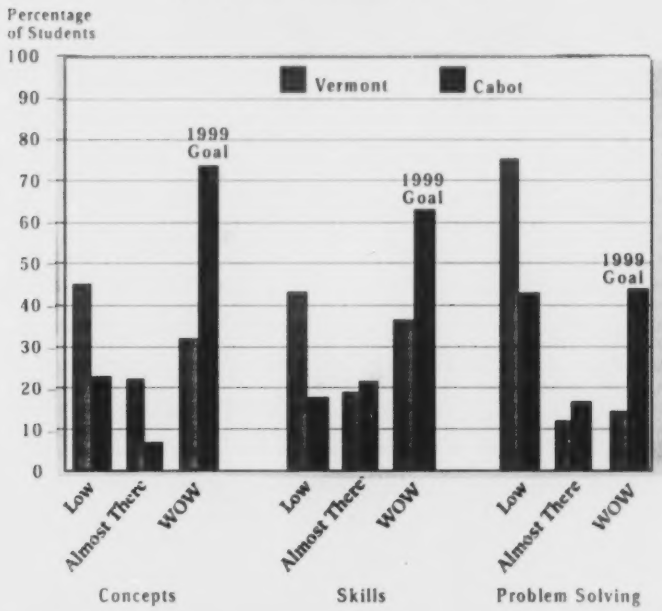
In Vermont, all students will participate in the Vermont Comprehensive Assessment System. This system includes local and statewide assessment and helps track trends across the state over time. The annual Condition of Education report, published by the Department, provides valuable insight into the performance of Vermont students.

Statewide data also is included in national and international studies and reports and is a resource for legislators and policy makers at the state and national level.

An example of school reporting of data to the community, taken from the 1997 Cabot School Report entitled "Using Student Performance Data to Achieve Excellent Results", is included on page 13.

10th Grade New Standards Mathematics Reference Exam

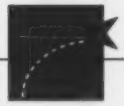
Spring 1996-Students Tested: 20



WOW! means that the students are attaining or exceeding Cabot Standards. **Almost There** means that the students are close to attaining the standards. **Low** means that the students are below or showed little evidence toward attaining Cabot Standards.

1999 Goal: 80% of 10th grade Cabot students will perform at or above the Standard in concepts, 75% in skills and 55% in problem solving.

BEST COPY AVAILABLE



Frequent Questions from Parents and Community Members About Assessment

Do children really understand the new assessments being done?

In classrooms where assessment becomes part of instruction, where students are expected to actively participate in assessment, and where there is an emphasis on results, even very young children can understand performance assessments. In classrooms where these conditions aren't in place, they probably don't. But preschoolers and primary students in many Vermont classrooms are completely in tune with performance-based assessment.

Where do teachers find the time to do these assessments?

Time is one of the greatest challenges facing our schools and assessments can be time-consuming. Only if assessment is used as an instructional strategy and help to promote student learning is the time well spent. Add-on assessments or assessments unrelated to instruction are being, and should be, phased out.

Are tests and traditional grades still important?

Yes. They are in many places and for many students and parents. Fortunately, all assessments related to the curriculum can be used effectively to develop grades. And paper and pencil tests are still the most efficient and effective way to assess student knowledge of important content and concepts that we care about. Ideally, tests combined with other performance-based assessments lead to more meaningful and accurate grades for students.

Why so much emphasis on new assessments? Isn't all that really counts grades and test scores when it comes to be time to get into college?

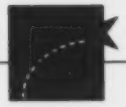
That is less and less true all the time - in fact, some of the nation's most competitive colleges and universities are leading the way in expanding the types of assessments they are interested in. For example, in a recent college visit tour, parents and students heard these two statements, both at very competitive schools - "We've turned away sixteen hundred boards and straight A's." and "We're looking for a student who'll bring as much to the college as we can offer to her - and we can't tell that from test scores and transcripts alone."

I am an employer and concerned with the skills I need from graduates entering my work place. How can I help the schools to raise their standards so the graduates have what they need to succeed today?

Make sure that students know you value the importance of education. Such programs as Academics Counts, in which employers require applicants to provide transcripts and attendance records carry a very important message.

Pay attention to the data schools provide. Look at grades and attendance. If you're looking for specialized skills, ask students to bring examples of their work, perhaps in portfolios.

Also, let your schools know what things are most valuable to you as an employer and come in and tell the students, too. As an employer, you'll have their attention.



In the long run, what really matters is learning. How can assessment impact learning?

Assessment impacts learning in several important ways. *First*, students are much more likely to hit a target that they can see and that holds still for them - this is the purpose of standards. *Second*, students learn more quickly and retain learning longer if they are given clear, specific feedback about their performance while they are learning - this is a key role of classroom assessment. *Third*, building the habit of being assessed and assessing one's own work on an ongoing basis is one of the most powerful tools for developing capacity for lifelong learning. We don't know what will be demanded of our students in the future, but we know they will have to know how to learn. Assessment is a powerful tool in building this capacity.

Glossary

Assessment - the careful and accurate measuring of student learning, and the clear communication of the results to teachers, parents, and others.

Authentic Assessment - The process of gathering evidence of student learning in ways that resemble "real life" as much as possible.

Criteria - guidelines, rules, or principles by which student work is assessed

Data - records and reports of assessment information

Fields of Knowledge - groups of specific subjects containing specific things students should know.

Learning Opportunities - recommended ways of providing instruction and assessing students' progress in meeting standards.

Performance Assessment - direct observation and judgment of student products or performances.

Portfolio- a purposeful collection of student work showing effort, progress, and achievement in one or more areas.

Rubric - a tool for measuring student performance, consisting of a measurement scale, clear criteria, descriptions of performance meeting the criteria, and sample responses (anchors).

Standards-Referenced and Standards-Based Assessment - assessment measuring student work against a set of standards, rather than against other students.

Test - a series of items measuring what students know or are able to do.

Vital Results - general skills that apply to many subjects and activities

BEST COPY AVAILABLE

We'd like to know how helpful this booklet was for you, and we'd like to demonstrate various forms of assessment at the same time. Please complete this and send it back to VISMT with any other comments you'd like.

1. Please circle one: This booklet was very:
   a. helpful
   b. easy to understand
   c. confusing
   d. irrelevant

2. Please complete this paragraph, selecting from the words below:

   It is important for students and for teachers to _____ learning during and after studies. Some kinds of assignments are _____, some _____, some _____, and some _____. When students find out how they performed on a _____ of any kind, they can see what they still need to _____ on. When teachers see the _____ they can design better learning _____ next time.

   assess
   results
   written
   test
   opportunities
   oral
   work
   creative
   experiential

3. Please write a paragraph that tells what you found most important in this book.

4. Draw a picture of how you feel about assessment, now that you have read this book.

5. With a group of friends, have a discussion about assessment, what you have learned from this booklet, and what else you might like to know. It might be good to include a teacher or principal who could answer questions!

Thank you for joining us in this exercise!

BEST COPY AVAILABLE